REMARKS

Entry of the foregoing, reexamination and reconsideration of the subject application are respectfully requested in light of the amendments above and the comments which follow.

As correctly noted in the Office Action Summary, claims 1-20 were pending. By the present response, claims 8, 10 and 11 have been amended. Claims 13-20 have been withdrawn as being directed to a non-elected invention. Thus, upon entry of the present response, claims 1-12 remain pending and await further consideration on the merits.

Support for the foregoing amendments can be found at least at the following locations in the original disclosure: paragraph [0026]; and the original claims.

ELECTION/RESTRICTION

Applicants hereby confirm the oral election of Group I (claims 1-12) for further prosecution on the merits. This election is made with traverse.

In order to properly maintain a restriction requirement under 35 U.S.C. §121, two distinct criteria must be satisfied. Namely, as set forth in MPEP §803, (1) the subjects of the claimed inventions must be shown to be either distinct or independent, and (2) it must be shown that examination of the two separately claimed inventions together in a single application would pose a "serious burden" to the Examiner. It is submitted that at least the second of these criteria has not been satisfied. In particular, the nature and relationship between the two separately claimed inventions are such that examination together of claims

1-20 in a single application would not pose a "serious burden" to the Examiner. Thus, reconsideration and withdrawal of the restriction requirement is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. §112, SECOND PARAGRAPH

Claims 8-11 stand rejected under 35 U.S.C. §112, second paragraph on the grounds set forth in paragraph 7 of the Official Action. By the present response, claims 8, 10 and 11 have been amended in a manner, while not narrowing, nonetheless is believed to address the above-noted grounds for rejection. Thus, reconsideration and withdrawal of the rejection is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. §102

Claims 1-12 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,827,570 to *Russell* (hereafter "*Russell*") on the grounds set forth in paragraph 9 of the Official Action. Claims 1-10 and 12 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 3,836,392 to *Lux et al.* (hereafter "*Lux et al.*") on the grounds set forth in paragraph 10 of the Official Action. These rejections are respectfully traversed.

The present invention is directed to a cutting tool which includes a substrate and one or more refractory layers of which at least one layer consists essentially of strongly textured α-alumina. According to the present invention, a relatively thick alumina layer of the alpha polymorph, with a desired microstructure and crystallographic texture is

provided. As a consequence of the fine-grain structure perpendicular to the growth direction of the α-alumina layer, cutting edges of the cutting tool are provided with a smooth surface finish, which compared to prior art α-alumina coated tools, results in an improved surface finish being provided on work pieces which are subject to machining by the cutting tool.

A cutting tool formed according to the principles of the present invention is set forth in claim 1. Claim 1 recites:

> *1. A cutting tool comprising:*
> *a body comprising sintered cemented carbide, cermet or ceramic; and*
> *a hard and wear resistant coating on at least functional parts of the body, said coating comprising a structure of one or more refractory layers of which at least one layer comprises an alumina layer having a thickness of 0.5-25 μm, and consisting essentially of single phase α-alumina textured in the [300]-direction with a texture coefficient larger than 1.5, the texture coefficient being defined as:*

$$TC(hkl) = \frac{I(hkl)}{I_0(hkl)} \left\{ \frac{1}{n} \sum \frac{I(hkl)}{I_0(hkl)} \right\}^{-1}$$

> *where*
> *I(hkl) = measured intensity of the (hkl) reflection,*
> *Io(hkl) = standard intensity of the ASTM standard, powder pattern diffraction data, card number 43-1484,*
> *n = number of reflections used in the calculation*
> *(hkl) reflections used are: (012), (104), (110), (113), (024), (116) and (300).*

Neither *Russell* nor *Lux et al.* anticipate the cutting tool of the presently claimed invention.

Russell, which is discussed briefly in paragraph [0005] of the present specification, is directed to an article of manufacture having a composite ceramic coating. In particular, the coating taught by *Russell* includes a first continuous metal oxide phase, as well as a discrete second phase of a discontinuous metal oxide embedded within the first phase (see, e.g. - column 6, lines 13-17).

With regard to the disclosure of *Russell*, it is asserted in paragraph 9 of the Official Action that:

> Russell does not explicitly disclose the claimed [300] orientation and texture coefficient, but since the alumina coating made similarly to the instant coating, it is the Examiner's position that these physical properties are inherent.

This assertion is respectfully traversed.

Not only does *Russell* fail to disclose he claimed texture coefficient, it also lacks sufficient disclosure of other aspects of the cutting tool recited in claim 1.

The cutting tool recited in claim 1 above clearly requires the presence of the alpha polymorph of alumina. However, *Russell* is entirely devoid of any disclosure concerning the use of the alpha polymorph of alumina.

Further, the alumina layer recited in claim 1 is described as "consisting essentially of single phase α-alumina. . ." by contrast, *Russell* quite clearly discloses a two-phase coating comprising a continuous metal oxide phase, as well as a discontinuous metal oxide phase dispersed therein. While the alumina coating of the presently claimed invention can include residues of additional materials, such as a "texture modifying agent", "the amount

of said residues is low enough not to effect the intrinsic properties of the alumina coating itself." (See, e.g.-paragraph [0022]).

By contrast, the coating taught by *Russell* is clearly designed such that the amounts of each individual phase of the coating is selected so as to impart specific attributes to the overall properties of the coating:

> The continuous and discontinuous metal oxide phases according to the present invention are extremely wear resistant, and are fully dense and adherent, and make it possible to combine the wear-resistant properties of two or more components without the problems associated with difference in expansion coefficients and adhesion presented by layering of continuous coatings of the materials. (Column 11, lines 19-26).

Thus, *Russell* additionally fails to disclose a layer formed from the alpha polymorph of alumina, as well as a layer which "consists essentially of α-alumina", as required by the presently claimed invention.

With respect to the above quoted assertion that the texture coefficient required by the presently claimed invention is inherent to the coating described by *Russell*, due to alleged similarities in the process of forming the same, such assertions are respectfully traversed.

First, it is important to recognize the appropriate legal standard which must be satisfied in order to establish that a claimed feature, not expressly disclosed by a prior art reference, is nonetheless inherent thereto. In order to satisfy this requirement, the missing element or function must necessarily result from the prior art reference. In re King, 801,

F.2d 1324, 231 USPQ 136, 138 (Fed. Cir. 1986). The CCPA has stated the principle in another way:

> [I]herency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981).

The Federal Circuit has cautioned, that all claimed elements must be found in the prior art in order to support a finding of anticipation:

> For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art. . . Although this disclosure requirement presupposes the knowledge of one skilled in the art of the claimed invention, that presumed knowledge does not grant a license to read into the prior art reference teachings that are not there. (emphasis added) Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 43 USPQ2d 1481, 1490 (Fed. Cir. 1997).

Taken in light of the above, it is respectfully submitted that the grounds of rejection fail to establish a *prima facie* case of anticipation.

Contrary to the assertion contained in paragraph 9 of the Official Action, the method of depositing the coating taught by *Russell* is significantly different from the method of forming the coating of the presently claimed invention.

In this regard, the present invention teaches:

> The nucleation of α-Al_2O_3 is started up by sequencing of the reactant gases that HCl and CO_2 are entering the reactor first in an Ar and/or H_2 atmosphere followed by $AlCl_3$. When nucleation of α-Al_2O_3 has occurred, a sulphur catalyst, preferably H_2S, is added to the reaction gas mixture in order to obtain the enhanced deposition rate. (See, e.g.-paragraph [0027])

By contrast, the method described by *Russell* is characterized as follows:

> The process of the present invention is preferably carried out by passing over the substrate a first gaseous mixture comprising a first metal halide gas comprising a member selected from the group consisting of the halides of aluminum, yttrium, and zirconium, and a second metal halide gas comprising a different member selected from the group consisting of the halides of aluminum, yttrium, and zirconium.

Thus, as is readily apparent from the above, significant distinctions are readily observable. For example, nowhere does *Russell* disclose, or even suggest, the sequencing of the reactant gases according to the method of the present invention. Therefore, a comparison between the method of depositing the coating of the present invention, and the method described by *Russell* fails to provide a tenable basis upon which to assert alleged similarities, much less the inherent characteristics, of undisclosed features of the *Russell* coating.

For at least the reasons noted above, reconsideration and withdrawal of the rejection is respectfully requested.

Lux et al. is directed to a process for improving wear resistance of cemented carbide parts. The process described by *Lux et al.* includes the deposition of a refractory metal oxide selected from the group including aluminum oxide, zirconium oxide and stabilized zirconium oxide, the layer having a thickness of up to 20 microns.

As acknowledged in paragraph 10 of the Official Action, *Lux et al.* fails to disclose that the coating described therein has the claimed texture coefficient.

In addition, Applicants respectfully submit that *Lux et al.* also fails to disclose use of the alpha polymorph of alumina as required by claim 1 of the present invention.

It is also asserted in paragraph 10 of the Official Action, that the coating described by *Lux et al.* would inherently possess the claimed texture coefficient due to alleged similarities in the methods of forming the coatings of *Lux et al.* and that of the presently claimed invention. This assertion is respectfully traversed.

The same legal standards discussed above apply to the rationale supporting the grounds for rejection set forth in paragraph 10 of the Official Action, and are incorporated herein by reference.

Applicants respectfully traverse the assertion that the methods of *Lux et al.* and that of the presently claimed invention are sufficiently similar to infer that resulting properties in the coatings would be the same.

In this regard, references made to the discussion of the method contained in paragraph [0027] of the present specification. By comparison, the method described by *Lux et al.* can be characterized by the following passage taken from column 4 therein:

> The reaction chamber 1 is supplied through a conduit 6 with a mixture of hydrogen and aluminum chloride from a device 7 for producing aluminum chloride in the gaseous phase and for mixing this gas with hydrogen at a variable ratio. The walls of the conduit 6 are kept at 200°C. by heating means not shown in the drawing. A further conduit 8 supplies the reaction chamber 1 with carbon dioxide or with a mixture of hydrogen and water vapour, depending on the type of reaction selected for depositing the aluminum. One or the other of these mixtures is supplied by a device 9 for mixing the gas.

From the above, it is readily apparent that significant differences exist between the method described by *Lux et al.* and that of the presently claimed invention. For example, nowhere does *Lux et al.* disclose, or even suggest, the sequencing of reactant gases such that HCl and CO_2 enter the reactor first in an Ar and/or H_2 atmosphere, followed by $AlCl_3$.

Thus, a comparison between the methods of forming the coating of the present invention and that of *Lux et al.*, provide no basis for supporting the assertion that undisclosed features are inherent to the disclosure of *Lux et al.*

For at least the reasons noted above, reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

Entry of the foregoing, reexamination and reconsideration of the subject application are respectfully requested in light of the amendments above and the comments which follow. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

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